Aliza Shahzad

Module A.4a Part 1 Answers

1. Sir Tim Berners-Lee invented the World Wide Web in 1989
2. Sir Tim worked at CERN, the large particle physics laboratory near Geneva, Switzerland.
3. Sir Tim was inspired to invent the web after noticing that scientists from all around the world who were using CERN’s accelerators were having difficulty sharing the information he wanted to solve this problem.
4. The three fundamental technologies that Sir Tim developed were

* HTML: HyperText Markup Language
* URI: Uniform Resource Identifier
* HTTP: HyperText Transfer Protocol

1. The decision was that the true potential of the web would only be unleashed if anyone, anywhere could use it without paying a fee or having to ask for permission.
2. The five “revolutionary ideas” from Sir Tim’s work are:

Decentralisation: No permission is required from a central authority to post anything on the web, there is no central controlling node, so no single point of failure … and no “kill switch”! This also implies freedom from indiscriminate censorship and surveillance.

Non-discrimination: If I pay to connect to the internet with a certain quality of service, and you pay to connect with that or a better quality of service, then we can both communicate at the same level. This principle of equity is also known as Net Neutrality.

Bottom-up design: Instead of code being written and controlled by a small group of experts, it was developed in full view of everyone, encouraging maximum participation and experimentation.

Universality: For anyone to be able to publish anything on the web, all the computers involved have to speak the same languages to each other, no matter what different hardware people may use; where they live; or what cultural and political beliefs they have. In this way, the web breaks down silos while still allowing diversity to flourish.

Consensus: For universal standards to work, everyone had to agree to use them. Tim and others achieved this consensus by giving everyone a say in creating the standards, through a transparent, participatory process at W3C.

1. Some ways that these principles could change society and politics for the better they connect everyone, raise voices and enhance participation.
2. When you click on a link, your computer understands the bits of the URL, creates something called a packet, and then sends it down the ethernet connections where it connects with many different computers until it gets to its destination (the website).
3. No, Sir Tim DID NOT invent the internet. When he was working on the WWW (world wide web), most of the bits he needed were already done and created. Vint Cerf, known as the “father of internet”, had already figured out the Internet Protocol, and also the Transmission Control Protocol, along with people he worked with. Paul Mockapetris and friend had figured out the Domain Name System. Also, people had already used TCP/IP and DNS to make email and other interesting things like that. In summary, Sir Tim only invented WWW, not the entire internet.
4. Some interesting math ideas that are connected to the web are:

* Vectors: Quantities with directions
* Algebra: Equations, variables
* Transformations
* Matrix: 3x3 block
* Calculus
* Vector fields
* Eigenvectors: Vectors which end up being stretched or shrunk but not changed in direction
* Physics
* Math of prime numbers: Modulo arithmentic, Euler's theorem, RSA algorithm

1. The Web is a good thing because it is very informative. People say that their lives have been saved because they found out about the disease they had and figured out how to cure it. The Web is a tool for communication. You can find out what other people mean and where they are coming from. The web can help people understand each other. Despite these positive things about the Web, it can be used for many negative things too. It can be used for downloading pictures if horrible, gruesome, violent or obscene things, or ways of making bombs which terrorists could use. The decision is in our hands. The Web can be used for either good or bad. Engines can be put in ambulances or tanks. Nuclear power can be used for bombs or for electrical power. Dynamite can be used to build tunnels or to make missiles. We have to decide which one to choose.